

P A T E N T C L A I M S

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1. Electron-optical lens arrangement with an axis that can be largely displaced, especially for electron lithography, with a cylinder lens and a quadrupole field, the plane of symmetry of said quadrupole field extending in the mid-plane of the gap pertaining to the cylinder lens, the focussing plane of the quadrupole being aligned in the direction of the gap, and the magnitude of the focussing refractive power belonging to the cylinder lens being twice as high as that of the quadrupole, **characterised in that**
- a deflection system (4, 5) for the charged particles being connected downstream in the plane of the gap pertaining to the cylinder lens, and
 - said electrodes or pole shoes, which generate a quadrupole field, being provided in the direction of the gap pertaining to the cylinder lens, and being individually and preferably successively excitable, and
 - the quadrupole field can be displaced according to the deflection of the particle beam such that the particle beam impinges in the area of the quadrupole field, and
 - a holding device is provided for the object, which device can be displaced perpendicularly in relation to the optical axis and in relation to the direction of the gap pertaining to the cylinder lens (6).

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2. Lens arrangement according to claim 1,
characterised in that the cylinder (6) and/or
quadrupole field are electrical.
3. Lens arrangement according to claim 1 or 2,
5 **characterised in that** the centre electrode (7) of
the cylinder lens (6) is subdivided in the
direction of the gap into individual regions which
are electrically insulated from one another and
individually actuable (comb-shaped lens).
- 10 4. Lens arrangement according to one of the preceding
claims, **characterised in that** the fields extend
symmetrically with respect to the centre plane of
the lens.
- 15 5. Lens arrangement according to one of the preceding
claims, **characterised by** a multiplicity
arrangements adjacent to one another and
contiguous to one another in the direction of the
gap pertaining to the cylinder lens (6)
- 20 6. Lens arrangement according to one of the preceding
claims, **characterised by** a multiplicity
arrangements vertically one above the other with
respect to the direction of the gap.
- 25 7. Lens arrangement according to one of the preceding
claims, **characterised in that** the deflection
system consists of two elements, which are
arranged one behind the other in the direction of
the particle beam and deflect in opposite
directions and by means of which a paraxial beam
deflection is achieved.

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8. Lens arrangement according to one of the preceding claims, characterised in that the deflection system (4,5) is constructed of a static magnetic (5) field and a second magnetic field (4) which
5 connected upstream in the direction of the ray impingement and is variable with respect to time.
9. Lens arrangement according to claim 8,
characterised in that the form of the pole shoe of the static magnetic field (5) is chosen such that,
10 independent of the deflection, the emerging particle stream travels parallel to the incident particle stream.

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